hybridization reaction to detect or to isolate a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO: 2.

IN THE ABSTRACT OF THE DISCLOSURE

Please delete the present Abstract of the Disclosure and replace it with the following Abstract of the Disclosure.

--The invention provides nucleotide sequences of the *gpm* gene which encode phosphoglycerate mutase, and fermentation processes for the preparation of amino acids, especially L-lysine, using corynebacteria wherein the gpm gene is amplified.--

II. REMARKS

Preliminary Remarks

The applicants request entry of the foregoing amendment pursuant to 37 C.F.R. §1.116 in that the amendment should overcome the rejections and objections found in the official action dated October 22, 2002 or in the alternative place the claims in a better form for appeal.

After entry of the foregoing amendment there will be an effective total of 17 claims at issue, 6 of which are independent claims. The applicants have previously paid for an effective total 20 claims, including 6 independent claims. Therefore, the applicants submit that no fee is currently due with respect to the number of claims at issue. Notwithstanding the foregoing, should the applicants' calculation be in error, the Patent Office is hereby authorized to charge any additional required claim fees to the undersigned's firm's USPTO deposit account (no. 03-3957).

As a convenience to the examiner, attached hereto is a marked-up version of the changes made to the specification and claims by the foregoing amendment. The attached Appendix is captioned **"Version with markings to show changes made"**.

Objection to the Specification

At page two of the official action the examiner objected to the abstract as amended by the applicants' response dated August 6, 2002. By the foregoing amendment, the applicants have amended the abstract to address the examiner's current concerns. In view of the amendment to the abstract, the applicants respectfully request that this objection be with drawn.

Objection to the Claims

The examiner objected to claim 6 with respect to use of the language "...degeneracy of the genetic],". The examiner asserted that the claim should read "...degeneracy of the genetic code," *i.e.*, simply correcting an obvious typographical error. The applicants submit that this rejection is now moot in that the phrase (and typographical error) have been removed by the foregoing amendment. Therefore, the applicants respectfully request the withdrawl of this objection.

35 U.S.C. §112, Second Paragraph

Claims 5-7 and 24-26 were rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claims 5 and 7, it is the examiner's position that such claims are indefinite in that applicants' amendment (to these claims) allegedly renders the claims confusing because the limitations are unimportant with respect to the patentability of the claims. As an example, the examiner refers to the last limitation of each of the claims, "that the polynucleotide comprises the nucleic acid sequence as shown in SEQ ID NO: 1 (claim 5)

or encodes the polypeptide sequence of SEQ ID NO: 2 (claim 7) and replicates in corynebacterial host cells."

Regarding claim 6, the examiner asserted that part (iii), which is directed to ". . . the nucleotide sequence shown in SEQ ID NO: 1 in which a sense mutation has been introduced, wherein the mutated nucleotide sequence encodes for a polypeptide having phosphoglycerate mutase activity . . ." is allegedly unclear in that it appears that applicants are attempting to include mutant polynucleotides beyond that of naturally occurring Corynebacterial polynucleotides within the scope of the claim. Since claim 6 depends from claim 2 and thus claim 1, which is drawn to isolated Corynebacterial polynucleotides, such a broadening of the scope of the claim would not be proper. The above referred to recitation of claim 6 part (iii) is therefore interpreted as encompassing naturally occurring sense mutations.

With regard to claim 24, the examiner asserted that the claim was allegedly indefinite with respect to use of the language of "hybridizes" as this term is unclear absent a statement of the conditions under which the hybridization reaction is performed.

Regarding claims 25 and 26, the examiner alleged indefiniteness in that it is unclear what the language ". . . having the function of a primer in a polymerase chain reaction to produce a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO: 2." (claim 25) and ". . . having the function of a probe in a hybridization reaction to detect or isolate a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO: 2." (claim 26) refer to.

The applicants respectfully traverse and submit that these rejections are now moot in view of the foregoing amendment to the claims. Specifically, in order to expedite prosecution and without prejudice to the applicants' right to seek broader claims in a continuing application, the applicants have amended the claims to overcome the rejections presented by the examiner. More specifically, claims 5-7 have been amended to remove the language

referred to by the examiner. Claim 24 has been canceled herein (without prejudice). Finally, claims 25 and 26 have been amended to more clearly note that it is the isolated polynucleotide that must have the defined funcation. Therefore, in view of the foregoing, the applicants request the withdrawal of rejection of claims 5-7, 25, and 26 based upon 35 U.S.C. §112, second paragraph.

35 U.S.C. §112, First Paragraph

The examiner rejected claims 1-4, 6 and 21-24 under 35 U.S.C. § 112, first paragraph, as allegedly containing subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. The examiner simply reiterated the rejection in the prior official action (see official action dated May 6, 2002).

The examiner also rejected claims 1-4, and 21-24 under 35 U.S.C. § 112, first paragraph, as allegedly being broader than the enabling disclosure. Specifically, it is the examiner's position that the specification, while being enabled for a polynucleotide encoding a polypeptide which is at least 90% identical to SEQ ID NO: 2, wherein said polypeptide has phosphoglycerate mutase enzymatic activity, does not reasonably provide enablement for any polynucleotide encoding a polypeptide which is at least 70% identical to SEQ ID NO: 2, which hybridizes to a polynucleotide which encodes SEQ ID NO: 2 or comprises at least 15 consecutive bases of SEQ ID NO: 1.

The applicants respectfully traverse and submit that these rejections are now moot in view of the foregoing amendment to the claims. Specifically, in order to expedite prosecution and without prejudice to the applicants' right to seek broader claims in a continuing application, the applicants have amended the claims to overcome the rejections presented by the examiner. More specifically, claims 1 and 6 have been amended to remove the language referred to by the examiner. Claims 3 and 24 have been canceled herein (without prejudice).

Finally, claims 2, 22, and 23 have been amended to more clearly define the applicants' invention. Therefore, in view of the foregoing, the applicants request the withdrawal of rejection of claims 1-4, 6, and 21-24 based upon 35 U.S.C. §112, first paragraph.

III. CONCLUSION

In view of the foregoing, the claims are now believed to be in form for allowance, and such action is hereby solicited. If any point remains in issue that the examiner feels may be best resolved through a personal or telephone interview, the examiner is strongly urged to contact the undersigned at the telephone number indicated below.

Respectfully submitted,

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Enclosure: Appendix

APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

Claims 1 and 2 were amended as follows.

1. (Twice Amended) An isolated [corynebacterial] polynucleotide comprising a polynucleotide sequence selected from the group consisting of:

[a) a polynucleotide that is at least 70% identical to a polynucleotide encoding a polypeptide containing the amino acid sequence of SEQ ID NO: 2, the polypeptide having phosphoglycerate mutase activity,]

[b]a) a polynucleotide encoding a polypeptide containing an amino acid sequence which is at least [70%] 90% identical to the amino acid sequence of SEQ ID NO: 2, the polypeptide having phosphoglycerate mutase activity,

[c]b) a polynucleotide that is complementary to the [polynucleotides] polynucleotide of a), [or b), and]

[d) a polynucleotide containing at least 15 consecutive bases of the polynucleotide sequence of a), b) or c), the polynucleotide] encoding a polypeptide having phosphoglycerate mutase activity.

2. (Twice Amended) The isolated polynucleotide according to claim 1 [which is a DNA that replicates in corynebacterial host cells] wherein said polynucleotide is isolated from a coryneform bacterium.

Claim 3 was canceled herein.

Claims 5-7, 22, and 23 were amended as follows.

5. (Twice Amended) An isolated [corynebacterial] polynucleotide comprising a polynucleotide sequence selected from the group consisting of:

[a) a polynucleotide that is at least 70% identical to a polynucleotide encoding a polypeptide containing the amino acid sequence of SEQ ID NO: 2, the polypeptide having phosphoglycerate mutase activity,]

[b]a) a polynucleotide encoding a polypeptide containing [an amino acid sequence which is at least 70% identical to] the amino acid sequence of SEQ ID NO: 2, the polypeptide having phosphoglycerate mutase activity, and

[c]b) a polynucleotide that is complementary to the [polynucleotides] polynucleotide of a), [or b), and]

[d) a polynucleotide containing at least 15 consecutive bases of the polynucleotide sequence of a), b) or c),] the polynucleotide encoding a polypeptide having phosphoglycerate mutase activity[;

wherein the polynucleotide comprises the nucleic acid sequence as shown in SEQ ID NO: 1 and replicates in corynebacterial host cells].

6. (Twice Amended) [The] An isolated polynucleotide [that is DNA according to claim 2 comprising] consisting of:

[(i)] the nucleotide sequence shown in SEQ ID NO: 1, or a fragment thereof

[(ii) at least one sequence that is a degenerate variant of sequence (i) within the degeneracy of the genetic code, or]

[(iii) the nucleotide sequence shown in SEQ ID NO: 1 in which a sense mutation has been introduced,] wherein [the mutated] said nucleotide sequence encodes for a polypeptide having phosphoglycerate mutase activity.

7. (Twice Amended) An isolated corynebacterial polynucleotide comprising a polynucleotide sequence selected from the group consisting of:

a) a polynucleotide that is [at least 70%] identical to [a polynucleotide] SEQ ID NO: 1 encoding a polypeptide containing the amino acid sequence of SEQ ID NO: 2, the polypeptide having phosphoglycerate mutase activity,

[b) a polynucleotide encoding a polypeptide containing an amino acid sequence which is at least 70% identical to the amino acid sequence of SEQ ID NO: 2, the polypeptide having phosphoglycerate mutase activity,]

[c]b) a polynucleotide that is complementary to the [polynucleotides] polynucleotide of a), [or b), and]

[d) a polynucleotide containing at least 15 consecutive bases of the polynucleotide sequence of a), b) or c), the polynucleotide] encoding a polypeptide having phosphoglycerate mutase activity[;

wherein the polynucleotide replicates in corynebacterial host cells and encodes a polypeptide comprising the amino acid sequence shown in SEQ ID NO: 2].

22. (Twice Amended) A member of the [Coryneform] coryneform group of bacteria transformed by the [introduction of the] polynucleotide according to one of claims 1 [or 6], 5, 6 or 7.

23. (Twice Amended) Bacteria [transformed] according to claim 22, wherein the bacteria are of the genus Corynebacterium.

Claim 24 was canceled herein.
Claims 25 and 26 were amended as follows.

25. (Amended) An isolated polynucleotide comprising at least 30 consecutive nucleotides of SEQ ID NO: 1 [having the function of] wherein said polynucleotide is a primer in a polymerase chain reaction to produce a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO: 2.

26. (Amended) An isolated polynucleotide comprising at least 30 consecutive nucleotides of the complement to SEQ ID NO: 1 [having the function of] wherein said polynucleotide is a probe in a hybridization reaction to detect or to isolate a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO: 2.

IN THE ABSTRACT OF THE DISCLOSURE

The Abstract of the Disclosure was amended as follows.

[The invention provides nucleotides sequences encoding the gpm gene, which itself encodes phosphoglycerate mutase, and fermentation processes for the preparation of amino acids, especially L-lysine, using corynebacteria wherein the gpm gene is amplified.]

--The invention provides nucleotide sequences of the *gpm* gene which encode phosphoglycerate mutase, and fermentation processes for the preparation of amino acids, especially L-lysine, using corynebacteria wherein the gpm gene is amplified.--

End of Appendix